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O'Hayer

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(54) **METHOD AND SYSTEM FOR CONTROLLING THE TEMPERATURE OF AN INDOOR SPACE**

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CPC **F24D 19/10** (2013.01); **F24F 2011/0058** (2013.01)

(58) **Field of Classification Search**
CPC F24D 5/12; F24D 19/10; F24F 2011/0058
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,932,456 A 4/1960 Deubel
3,761,018 A 9/1973 Rekai

3,834,618 A * 9/1974 Buckwalter G04C 23/16 219/511
4,289,272 A 9/1981 Murase
4,381,074 A * 4/1983 Iijima B60H 1/00835 165/43
5,335,514 A * 8/1994 Hennessee B60H 1/321 62/209
5,573,180 A 11/1996 Werbowsky
(Continued)

FOREIGN PATENT DOCUMENTS

GB 2018470 A * 10/1979 F24F 11/0009

OTHER PUBLICATIONS

<http://simplisafe.com/freeze-sensor>; Last accessed on Aug. 30, 2015; © 2014 SimpliSafe, Inc.

(Continued)

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(57) **ABSTRACT**

A method for automatically operating a heating system includes operating a thermostat at a set point having a default set point value, automatically receiving an indoor temperature signal from an indoor temperature sensor, automatically receiving an outdoor weather indicator signal representing a measured or predicted outdoor weather condition, based on the outdoor weather indicator signal, determining a factor affecting heat flow out of water pipes adjacent to an indoor space, comparing the factor affecting heat flow to a pre-determined freeze protection point, based on the comparison, determining whether to maintain the set point at the default set point or to raise the set point to a computed set point higher than the default set point, and using the thermostat to automatically control the heating system.

20 Claims, 5 Drawing Sheets

